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ABSTRACT

The Pennsylvania State University, through its World Campus, is exploring several design models which provide multifaceted communication environments for distance education. Currently, students enrolled in World Campus programs interact with courses delivered through WebCT, a course management tool, or through FirstClass. This paper focuses on FirstClass, a communication tool that provides students with access to a single communication environment that supports individual courses, as well as offering an interface to the whole curriculum, including the ability to communicate with the World Campus Learner Support (i.e., the administrative support unit for applications, registration, financial aid, and ombudsmen for students). The following topics are addressed: the FirstClass environment; collaborative workspace; level of interactions; and faculty and student perceptions. Figures illustrating the FirstClass desktop and collaborative work space are included. (DLS)

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CMC Environments Designed to Facilitate Multiple Levels of Interaction

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The challenge in distance education today is not so much delivery of content, but how to use the new tools available for the Internet to design effective and efficient communication environments. These communication environments need to be able to support students' interactions with the instructor, interactions with peers, collaborative work areas, and real time interactions. They need to not only do this for individual courses, but for full programs of study. For many years we have focused on designing environments around individual courses (Wells, 1992) and the on-line tools, either Internet based or those within earlier systems such as PLATO (Szabo, 1995), were adequate for facilitating communication within individual courses. However, as distance education continues to move into the mainstream and more institutions explore the possibilities of offering full degree and certificate programs on-line, more robust communication environments must be developed. These environments will need to facilitate interactions with the institution's administrative offices, academic departments, faculty, and the students.

The Pennsylvania State University through its World Campus is exploring several design models which provide these multifaceted communication environments. Currently, students enrolled in programs offered through the World Campus are interacting with courses delivered through WebCT, a course management tool produced by the University of British Columbia, or through FirstClass, a communication tool marketed by SoftArc out of Toronto, Canada. Both of these environments provide students with a range of tools that are used throughout their course of study. While WebCT is more course specific, the FirstClass environment allows us to custom design the interface to support the full curriculum. Thus, students have access to a single communication environment which not only supports individual courses, but provides an interface to the whole curriculum. This includes the ability to communicate with the World Campus Learner Support, the administrative support unit for applications, registration, financial aid, and ombudsmen for the students.

The FirstClass Environment

One of the Penn State World Campus programs which is designed around FirstClass is the Program in Noise Control Engineering (NCE). The NCE Program is a four course certificate developed to provide engineers in the field with both the theoretical and practical knowledge required to address noise and vibration control problems in industry. Each course in the NCE program consists of a CD-ROM, a Resource Notebook, simulated measuring instruments, and mathematical graphing software, all of which are integrated around the FirstClass environment.

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Within the FirstClass environment for NCE (see Figure 1) students have access to standard tools such as private e-mail and the Help public conference area, as well as private conferences and chats set up especially for the particular cohort of students. In Figure 1 you will notice that four course conferences have been set up, one for each course in the certificate program. Within each of these conferences is a series of sub-conferences which aggregate threaded discussions specific to the particular unit or lesson the students are working on. At the center of the student's FirstClass desktop is the Instructor's Office, which is a private conference area for the cohort and serves as communication space where students and the instructor can post messages related to a specific course or the certificate in general. Students may also post messages to the World Campus administrative units through private e-mail or may interact with World Campus support through the Tech Support Conference. This functionality allows individuals from both administrative and academic units to have access to the students and be able to respond to technical questions concerning not only technical operations, but issues associated with programming input into software packages like MatLab, which tutors in the academic unit assist with.

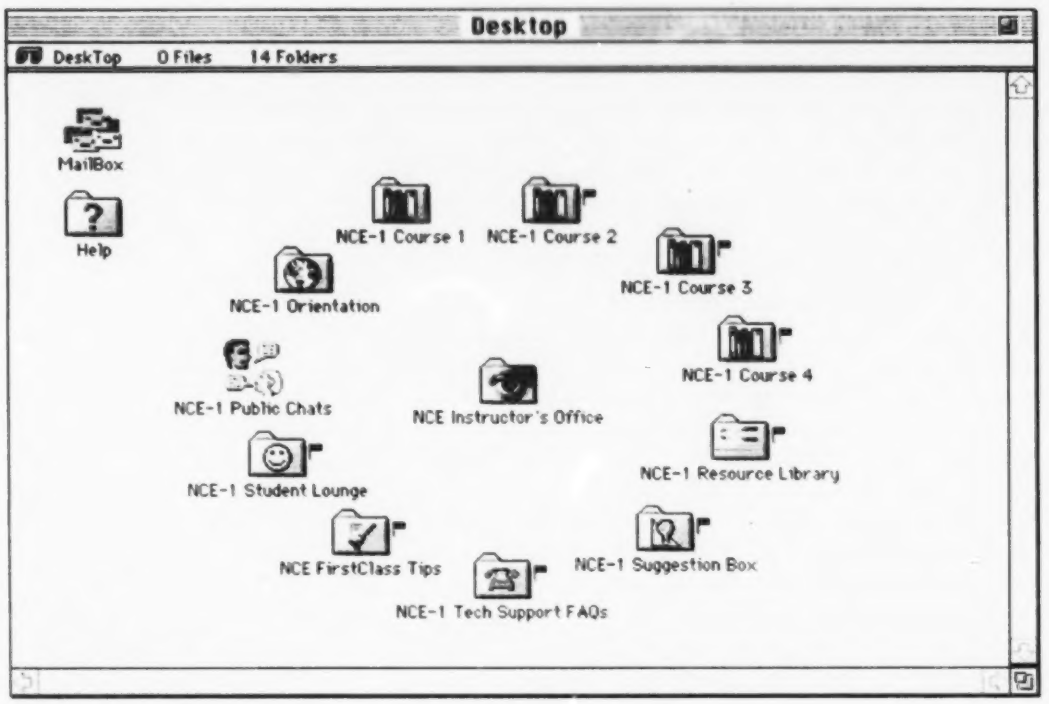

Figure 1

This particular FirstClass environment is designed to support students from the time they are officially enrolled in the certificate program through the completion of the final comprehensive exam. It also assures that students and faculty will have access to discussions which may develop over all four courses, especially as they are related to the collaborative assignments.

Collaborative Workspace

Students enrolled in each course in the NCE Program are required to collaborate on a major project which is interwoven between all four courses. To facilitate the collaborative teams each course conference area has a collaborative conference space (see Figure 2). The FirstClass permission structure allows one to establish collaborative workspace for each team which is secure and to which only the team members and the instructor may have access. In this way one can have all teams in a course working on a similar project, but each team will only have access to their work in progress and will not be able to see the interim reports/interactions of the other teams. In the case of the NCE Program, where the collaborative projects are interwoven between four courses, the FirstClass environment also allows students to review their work from the previous courses.

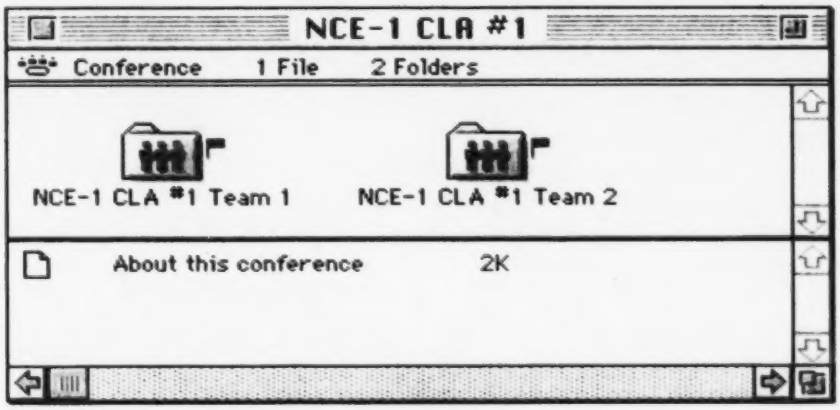

Figure 2

Level of Interactions

The sub conferences within each NCE course conference are broken down by unit and lesson. Within course one, for example, there were five units and within each unit five lessons. As a part of each lesson there are a series of study questions which the students are to respond to prior to starting a lesson. They are then asked to revisit these questions at the end of the lesson. The intent here is for students to interact with each other and draw upon the thoughts of their peers. These conferences also allow the faculty to monitor the discussions and interact where appropriate with the group. Each lesson also contains individual learning activities that students have to complete. Here they are encouraged to work together on the problems and draw upon each others strengths.

As the first course in the program has just ended we do not have quantifiable data, but we do have some preliminary observations on level of interactions. It was interesting to note that most students simply posted their responses to the study questions and did not read the responses of others. However, there were several occasions where we noted that students who were having difficulty with a particular problem often reviewed the posting of others prior to contacting the instructor. It is also important to note here that these postings were not graded, so the level of interaction/posting was not as high as we witnessed in the

collaborative learning activity. In the collaborative learning activity we saw a large number of postings and discussion going on as the student teams worked on the assignment. It was interesting to also note the number of students who utilized the private chat capability of FirstClass to discuss project issues and to simply support each other through the process. As one student stated:

> I think the chat capability also encourages more personal interaction among the students. I think several of us have had some trying times personally and professionally this semester, and I think the mutual support network has been very helpful to some of us.

With regard to the level of interaction required for the instructor, we observed that he was usually on-line five days a week for a total time of five to seven hours per week. The instructor made a conscious effort to read all messages and respond to all questions with appropriate feedback for the students.

Faculty and Student Perceptions

Although the end of course evaluation has not been analyzed, impressions of the learning experience, as gleaned from the interactions and notes sent to the designers and learner support, would indicate a general level of satisfaction with the course. As expected, some students experienced intermittent problems with their ISP connections and subsequently their FirstClass connection which piggybacks on the IP connection. Also, a few students felt that they needed more orientation time to familiarize themselves with the communication environment and develop a comfort level for knowing where to post certain concerns or questions.

From the instructor's view point, he indicated that he truly enjoyed the experience and stated that he was able to interact with individual students more in the on-line environment than in a traditional resident model. He also mentioned that he felt he became closer to the students in terms of knowing their backgrounds and desired goals for the course. The instructor specifically mentioned how well the collaborative learning activity went and how thrilled he was with the quality of the final projects. This sentiment was echoed by several of the students. The instructor has, however, questioned the time required to adequately interact with a larger group of students and is cautious about having an enrollment of more than thirty in a single course within the program.

Discussion

The instructional design team and members of the World Campus learner support at Penn State feel that the early feedback and level of student satisfaction is very positive. While we recognize that the FirstClass learning environment for the NCE program needs to be modified, based on feedback, the general consensus is that it has functioned well and their were few technical problems after the first two weeks of orientation and introduction to the course. While we are still in the early stages of delivery of the certificate program it will be interesting to witness how the environment performs for the students and faculty through the next three courses in the program.

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Autobiographical Sketches

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